

Name _____

Date _____

Cells: The Building Blocks

Cells are the tiny building blocks of living things. Many cells are so small that they can only be seen with a microscope. An English scientist named Robert Hooke first discovered cells over 300 years ago. Hooke discovered cells while examining cork under a microscope. When he was looking at the cork, he noticed a pattern of small squares. These squares were boxy and reminded Hooke of little rooms. He named these squares “cells,” after *cella*, which is the Latin word for room. Once microscopes became more advanced, scientists were able to study the insides of cells and found different structures.

The cell membrane is a thin covering on the cell that surrounds the cell and separates it from its surroundings. It is this cell membrane that controls the shape of the cell. The cell membrane also controls what is permitted to go into the cell (like water or food) and what is permitted to leave the cell (like waste).

The cytoplasm is located inside of the cell. The cytoplasm is a jelly-like liquid. All other parts of the cell are embedded in the cytoplasm.

The nucleus is located in the cytoplasm and serves as the control center for the cell. The nucleus is surrounded by a nuclear membrane. Similar to the cell membrane, the nuclear membrane is responsible for what goes into and out of the nucleus. The nucleus is responsible for running the cell.

In order to reproduce cells, a cell will split into two cells. Before it splits, the nucleus doubles in size. It then divides itself in half, supplying each cell with its own nucleus. This ensures that each new cell has the same control center.

Inside of the cytoplasm, there are also vacuoles. Vacuoles are small oval structures that store food, water and waste. These vacuoles also store mitochondria. Mitochondria are tiny structures that are shaped like kidney beans. The mitochondria are responsible for changing food into energy that can be used by the cell to do work.

Cells in both plants and animals all share these same features. Though cells can differ in size and shape, all of them have a cell membrane, cytoplasm, a nucleus, a nuclear membrane, vacuoles, and mitochondria.

While cells all have the same features, they often look different. Cells can be different shapes, based on the function or job that they do. For example, muscle cells are thin and long so that they can expand and contract in order to make the body move. Red blood cells are extremely small and are rounded. This is so they can squeeze through blood vessels to bring oxygen to other parts of the body.

While the cells of plants and animals share the same cell features, plant cells have an additional two features that animal cells do not have. Unlike the cells in animals, plant cells have cell walls. The cell wall surrounds the cell membrane. It is a sturdy layer that supports and protects the cell.

Plant cells also have chloroplasts. Chloroplasts contain chlorophyll, which is the green substance that enables plants to make food by using the energy of the sun. The difference between animal cells and plant cells is largely due to the fact that plants make their own food while animals do not.

Name _____

Date _____

Cells: The Building Blocks Questions

Multiple Choice:

1. _____ are the tiny building blocks of living things:
 - a. animals
 - b. cells
 - c. squares
 - d. microscopes

2. Cell is the Latin word for:
 - a. microscope
 - b. square
 - c. hook
 - d. room

3. In order to reproduce cells, a cell will:
 - a. deposit waste
 - b. deliver oxygen
 - c. split into two cells
 - d. absorb energy from the sun

True or False:

- ___ 4. An English scientist named Robert Hooke first discovered cells.
- ___ 5. The cell membrane is a thin covering on the cell that surrounds the cell.
- ___ 6. Plant cells do not have chloroplasts.
- ___ 7. Cells can be different shapes, based on the function or job that they do.

Fill Ins:

8. _____ are small oval structures that store food, water and waste.
9. _____ are tiny structures that are shaped like kidney beans.

Name _____

Date _____

Cells: The Building Blocks Answers

Multiple Choice:

1. _____ are the tiny building blocks of living things:
 - a. animals
 - b. cells
 - c. squares
 - d. microscopes

2. Cell is the Latin word for:
 - a. microscope
 - b. square
 - c. hook
 - d. room

3. In order to reproduce cells, a cell will:
 - a. deposit waste
 - b. deliver oxygen
 - c. split into two cells
 - d. absorb energy from the sun

True or False:

- T 4. An English scientist named Robert Hooke first discovered cells.
- T 5. The cell membrane is a thin covering on the cell that surrounds the cell.
- F 6. Plant cells do not have chloroplasts.
- T 7. Cells can be different shapes, based on the function or job that they do.

Fill Ins:

8. Vacuoles are small oval structures that store food, water and waste.
9. Mitochondria are tiny structures that are shaped like kidney beans.